

ABSTRACT OF THE DISCLOSURE

The present invention relates to a method for fabricating a composite gas separation module and to gas separation modules formed by the method. The present invention also relates to a method for selectively separating hydrogen gas from a
5 hydrogen gas-containing gaseous stream.

In one embodiment, the method for fabricating a composite gas separation module includes depositing a first material on a porous substrate, thereby forming a coated substrate. The coated substrate is abraded, thereby forming a polished substrate. A second material is then deposited on the polished substrate. The first material, the
10 second material, or both the first material and the second material can include a gas-selective material. For example, the gas-selective material can include a hydrogen-selective metal, *e.g.*, palladium, or an alloy thereof. In one embodiment, the method includes the step of forming a dense gas-selective membrane over the porous substrate. Practice of the present invention can produce gas separation modules that have thinner
15 and/or more uniform dense gas-selective membranes than are possible using conventional manufacturing techniques.